CFS-229L

SERVICE MANUAL

AEP Model
UK Model

Model Name Using Similar Mechanism	CFS-209L
Tape Transport Mechanism Type	MF-209-102

SPECIFICATIONS

Frequency range	FM : 87.6—107MHz MW : 531—1,602kHz LW : 153—279kHz SW : 5.95—18MHz
Aerials	FM/SW : Telescopic aerial MW/LW : Built-in ferrite bar aerial
Recording system	4-track, 2-channel stereo
Frequency response	80—10,000Hz
Speakers	Two way 10cm dia. full range×2 2cm dia. tweeter×2
Input	CD/LINE IN jacks (stereo pinjacks) (2) input impedance 47 kilohms, sensitivity 0.44V
Output	Headphones jack (stereo minijack) for 16—68 ohm impedance headphones
Maximum power output	2.6W+2.6W
Power requirements	220—230V AC, 50Hz (AEP, G model) 230V AC, 50Hz (UK model) 9V DC, six R20 (size D) batteries
Power consumption	14W in AC operation

Battery life

Batteries	FM recording	Tape playing
Sony SUM-1 (NS)	Approx. 12 hours	Approx. 7 hours
Sony AM1 alkaline	Approx. 24 hours	Approx. 14 hours

Dimensions	Approx. 428×153×147.5mm (w/h/d) incl. projecting parts and controls, not incl. handle
Mass	Approx. 2.9kg incl. batteries
Accessory supplied	Mains lead (1)

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

RADIO CASSETTE-CORDER

SONY®

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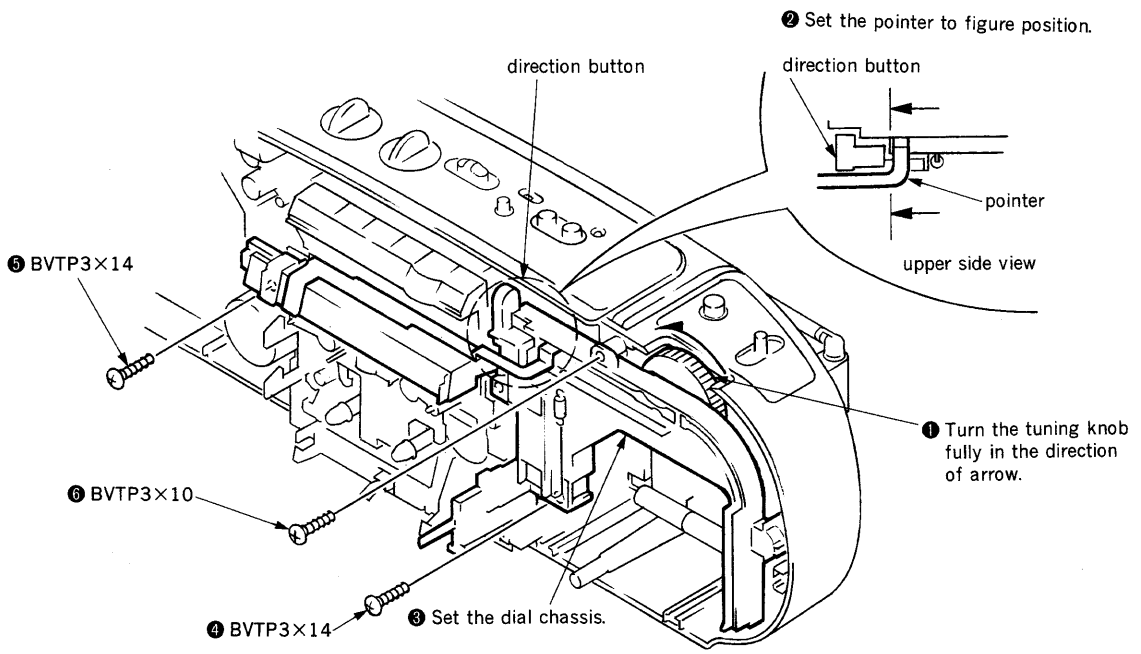
SECTION 1
DIAL POINTER SETTING

1-1. DIAL POINTER SETTING



SECTION 2
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
6. Power supply voltage: 9V dc.

Torque Measurement

Torque	Torque Meter	Meter Reading
FWD	CQ-102C	22—55g•cm (0.31—0.76oz•inch)
FWD Back Tension	CQ-102C	2—5g•cm (0.03—0.06oz•inch)
REV	CQ-102RC	22—55g•cm (0.31—0.76oz•inch)
REV Back Tension	CQ-102RC	2—5g•cm (0.03—0.06oz•inch)
FF	CQ-201B	more than 60g•cm (more than 0.84oz•inch)
REW	CQ-201B	more than 55g•cm (more than 0.77oz•inch)

Tape Tension Measurement

Mode	Tension meter	Meter Reading
FWD	CQ-403A	more than 100g (more than 3.53 oz)
REV	CQ-403R	

SECTION 3
ELECTRICAL ADJUSTMENTS

3-1. TAPE RECORDER SECTION 0dB=0.775V

Standard Output Level

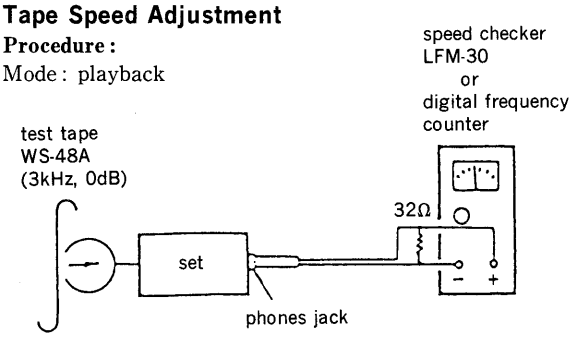
Output terminal	SP OUT	HP OUT
load impedance	3.2Ω	32Ω
output signal level	0.775V (0dB)	0.25V (−10dB)

Test Tape

Type	Signal	Used for
WS-48A	3kHz, 0dB	tape speed adjustment

Tape Speed Adjustment

Procedure:
Mode: playback

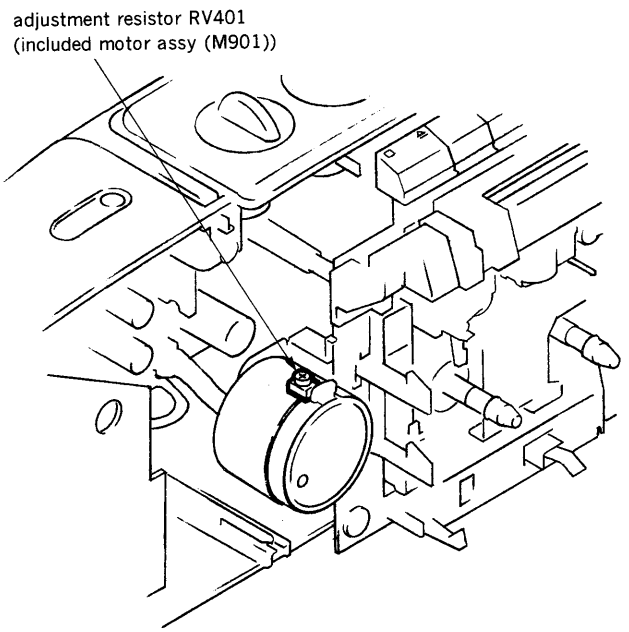


Adjustment Value:

Speed checker	Digital frequency counter
−3% to +3%	2,910 to 3,090Hz

Frequency difference between the beginning and the end of the tape should be within ±1.5% (45Hz).

Adjustment Location:

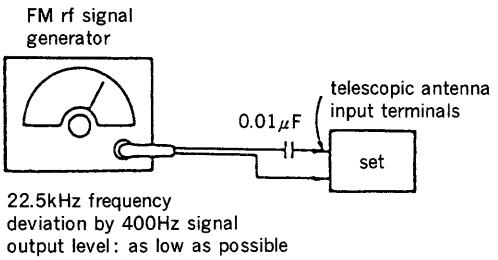


3-2. TUNER SECTION 0dB=1μV

• FM Section

Setting :

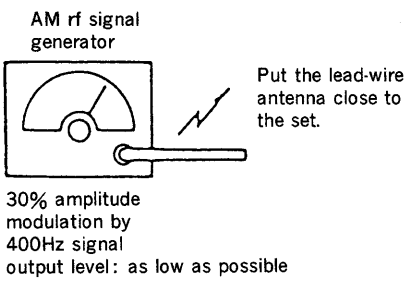
FUNCTION switch : FM


FM rf signal generator
telescopic antenna input terminals
0.01μF
set
22.5kHz frequency deviation by 400Hz signal output level : as low as possible

• MW/LW Section

Setting :

FUNCTION switch : MW or LW

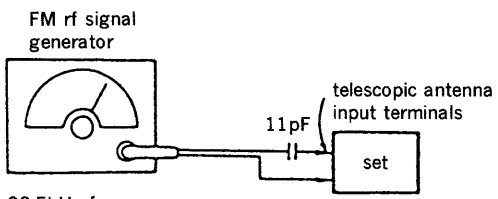

AM rf signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400Hz signal output level : as low as possible

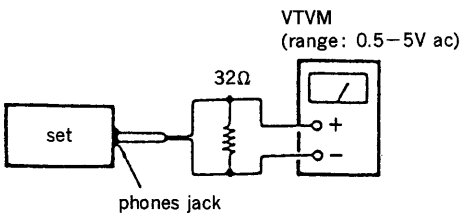
• SW Section

Setting :

FUNCTION switch : SW

FINE TUNE control : mechanical mid


FM rf signal generator
telescopic antenna input terminals
11pF
set
22.5kHz frequency deviation by 400Hz signal output level : as low as possible



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.
- Remove telescopic antenna in FM/SW section adjustments.

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L2	CT2
87.35MHz	107.8MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1	CT1
87.35MHz	107.8MHz

AM IF ADJUSTMENT
Adjust for a maximum reading on VTVM.
T1
455kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L8	CT4
515kHz	1,680kHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3-1	CT3
600kHz	1,400kHz

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4	CT8
145kHz	300kHz

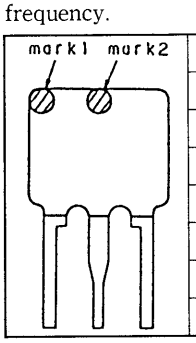
LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3-2	CT7
160kHz	260kHz

SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L6	CT6
5.8MHz	18.4MHz

SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	CT5
5.8MHz	18.4MHz

Note :

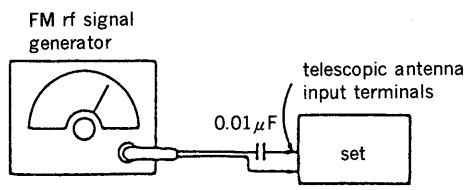
This set employs three ceramic filters (CF1, 3 and 4) which should have the same color marking to identify their center frequency.



mark1	mark2	Carrier Frequency
red	—	10.70MHz
blue	—	10.67MHz
orange	—	10.73MHz
black	—	10.64MHz
white	—	10.76MHz
white	white	10.75MHz
yellow	—	10.79MHz

FM VCO Adjustment

Setting :

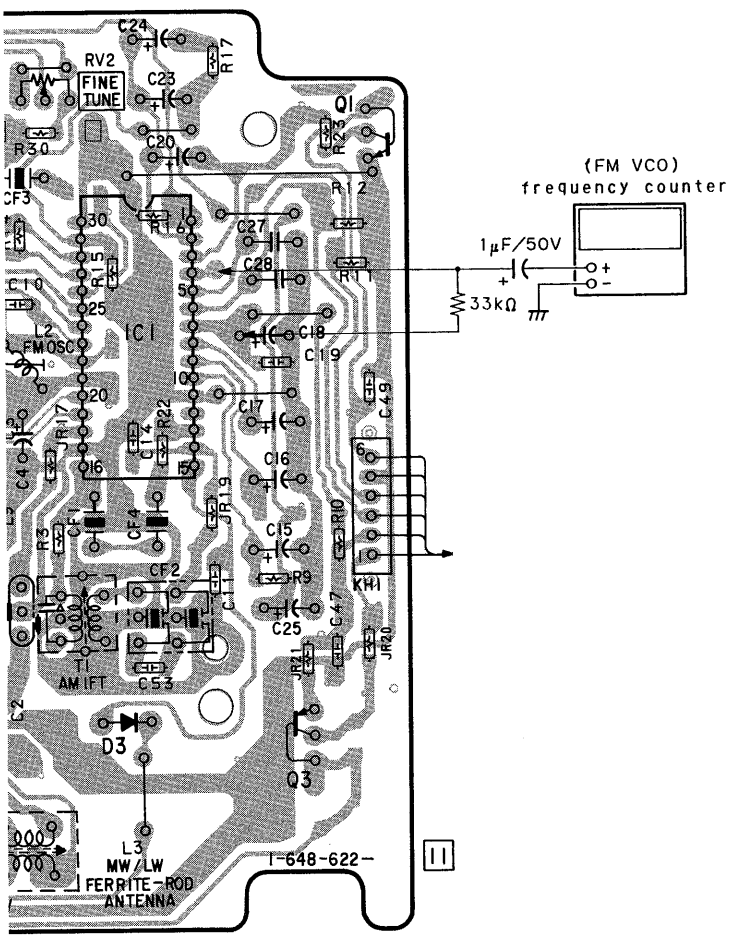


Carrier frequency : 98MHz
Modulation : no modulation
Output level : 0.1V (100dB)

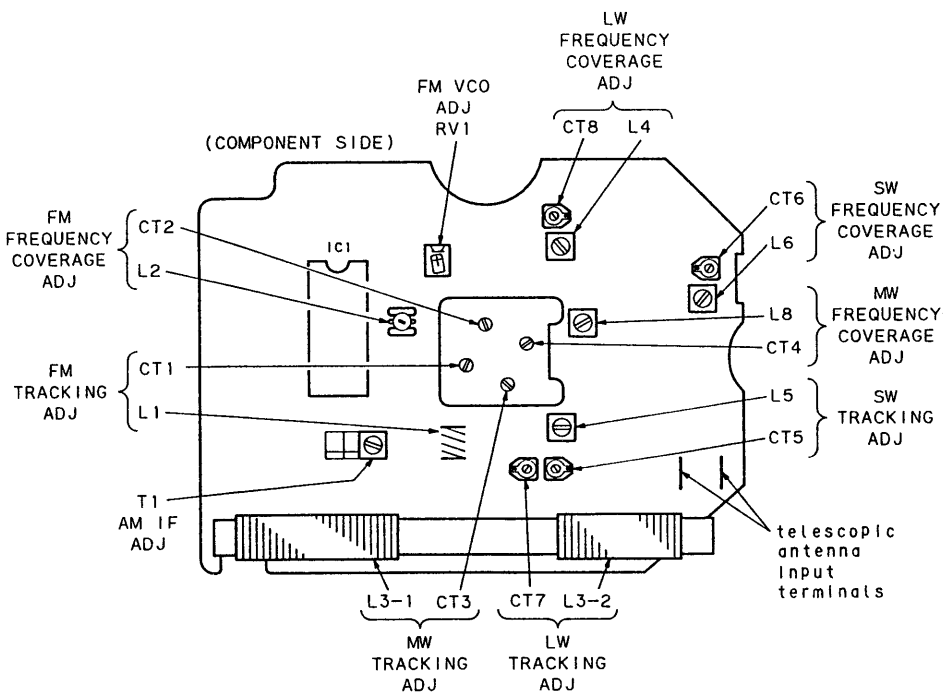
Procedure :

1. Connect frequency counter as shown below.
2. Tune the set to 98MHz.
3. Adjust RV1 for 76kHz±500Hz reading on the frequency counter.

Adjustment Location : tuner board (conductor side)

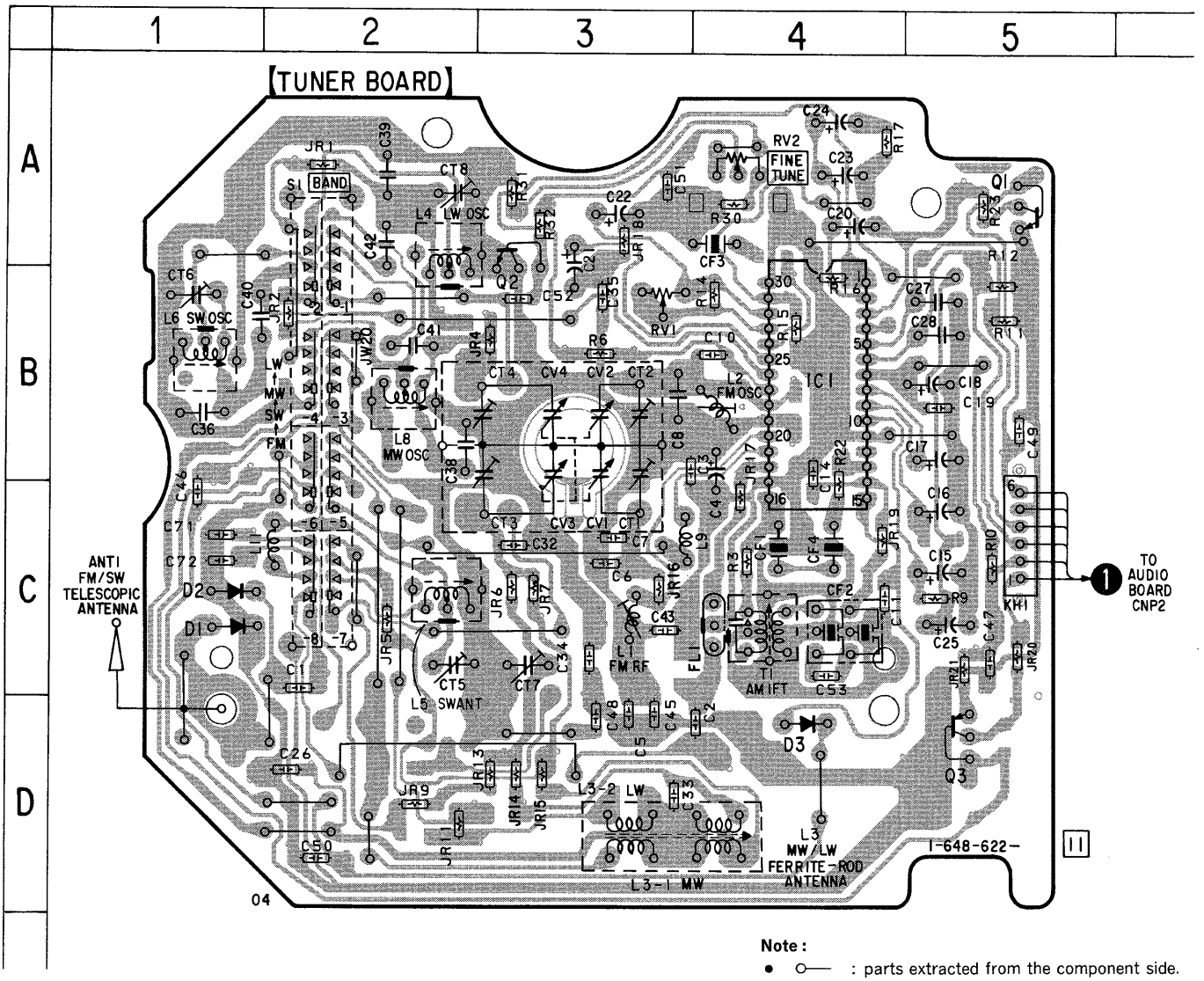


Adjustment Location : tuner board (component side)



SECTION 4
DIAGRAMS

4-1. PRINTED WIRING BOARD—TUNER SECTION—



Note :

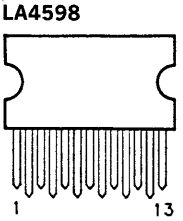
- ○— : parts extracted from the component side.
- ⬚← indicates side identified with part number.
- ▒▒ : Pattern on the side which is seen.

4-2. SEMICONDUCTOR LEAD LAYOUTS

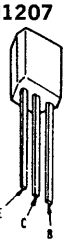
BA3870

(Top view)

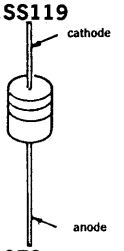
LA4598



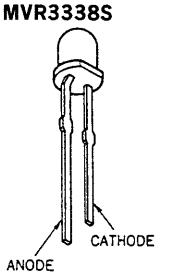
DTA114ES
DTA144ES
DTC114YS
RN1202
RN1207



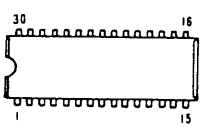
RD6.8ES-B2
1SS119



MVR3338S

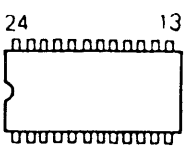


CXA1238S



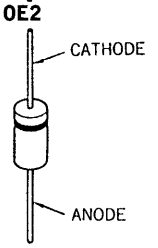
(Top view)

TA2036N

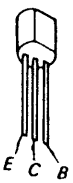


(Top view)

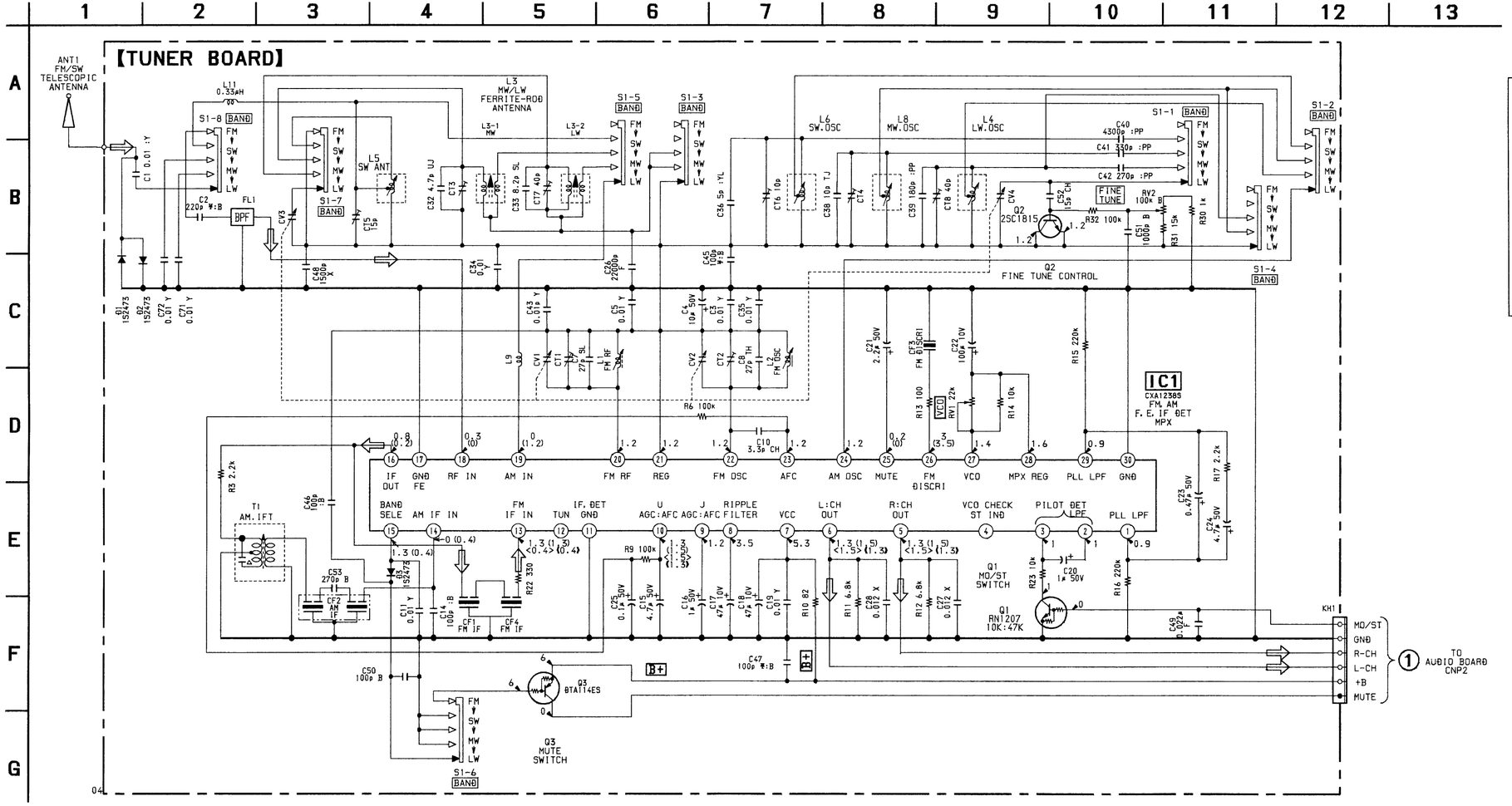
10E2



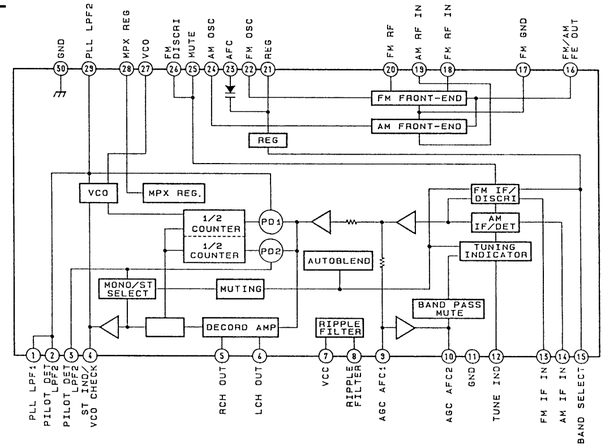
2SC1815-GR
2SC2001-LK



4-3. SCHEMATIC DIAGRAM—TUNER SECTION—



• IC Block Diagram
IC1 CXA1238S



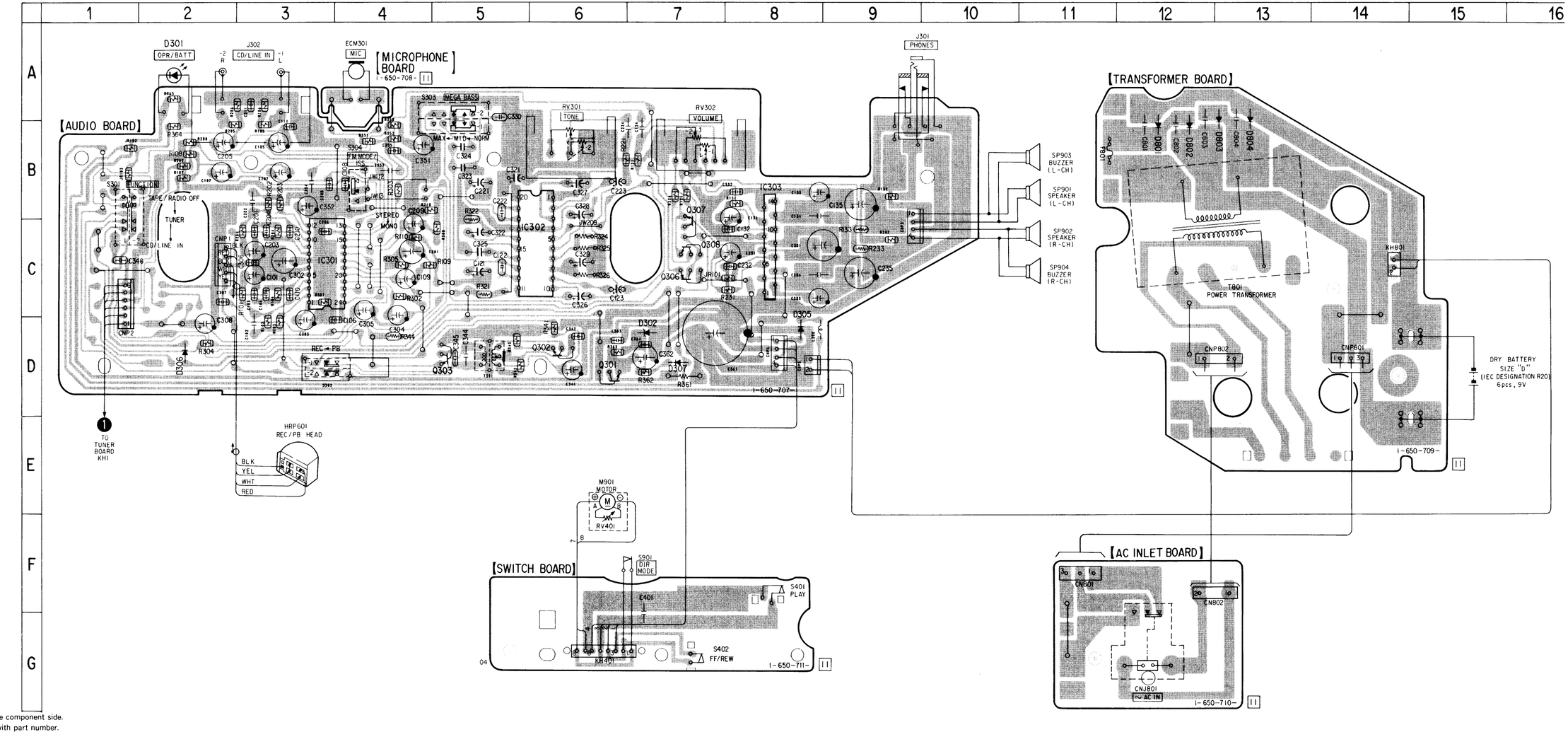
Note :

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- B+ : B+ Line
- ▭ : adjustment for repair.
- Voltage is dc with respect to ground under no-signal (detuned) conditions.
- no mark: FM
  ( ): SW
  < >: MW
  << >>: LW
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM

● Semiconductor Location

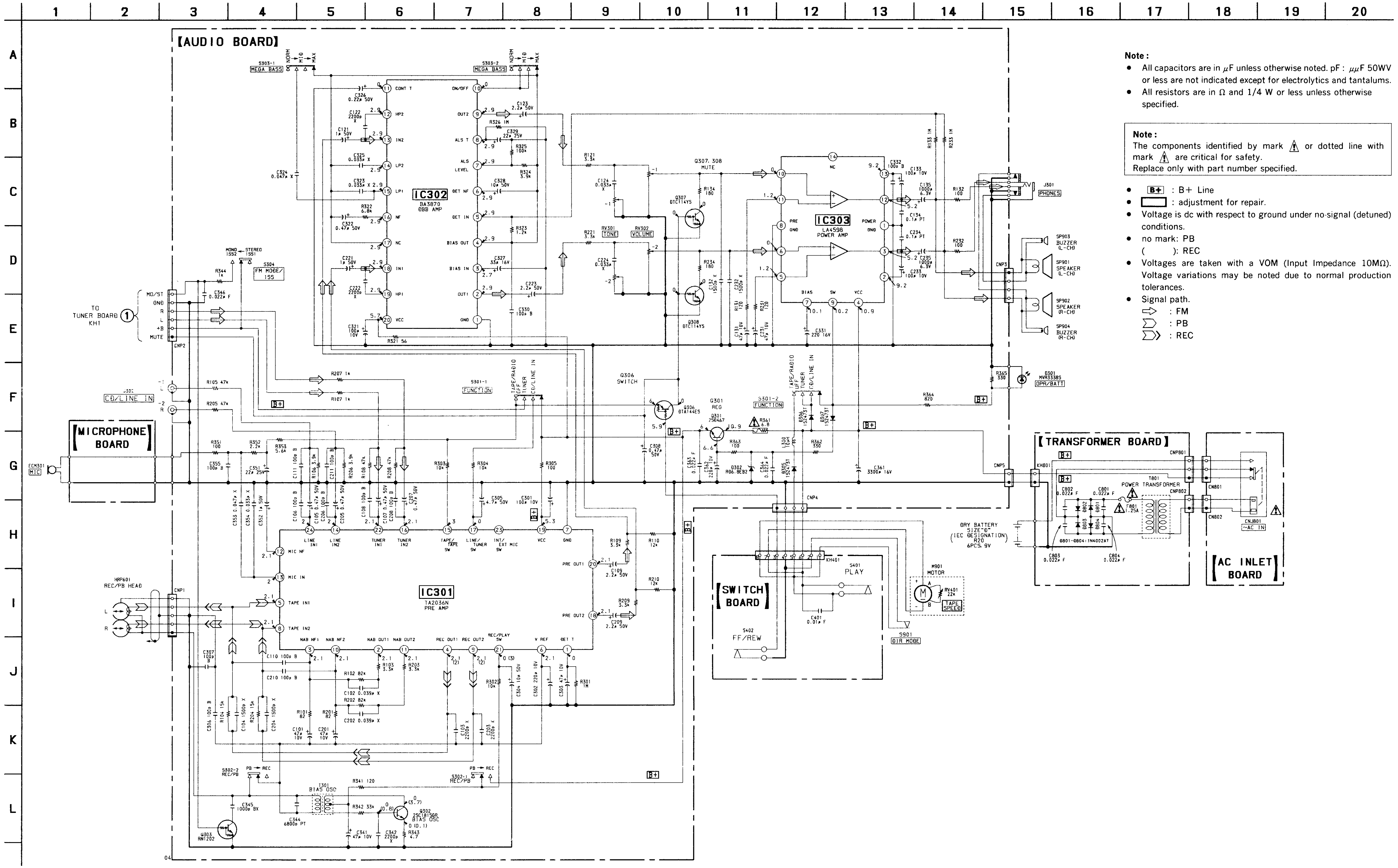
Ref. No.	Location
D301	A-2
D302	D-7
D305	D-8
D306	D-2
D307	D-7
D801	B-12
D802	B-12
D803	B-12
D804	B-13
IC301	C-3
IC302	C-6
IC303	B-8
Q301	D-6
Q302	D-6
Q306	C-7
Q307	C-7
Q308	C-7

4-4. PRINTED WIRING BOARDS—AUDIO SECTION— ● Refer to page 6 for Semiconductor Lead Layouts.



Note :
- ○— : parts extracted from the component side.
- —▷— indicates side identified with part number.
- ▨ : Pattern on the side which is seen.

4-5. SCHEMATIC DIAGRAM—AUDIO SECTION—



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
A B C D E F G H I J K L
【AUDIO BOARD】
S303-1 MEGA BASS
S303-2 MEGA BASS
NORM MID MAX
IC302
BA3870
OBB AMP
IC303
LA4598
POWER AMP
IC301
TA2036N
PRE AMP
Q307, 308
MUTE
Q307 DTC114YS
Q308 DTC114YS
RV301 TONE
RV302 VOLUME
J301 PHONES
SP903 BUZZER (L-CH)
SP901 SPEAKER (L-CH)
SP902 SPEAKER (R-CH)
SP904 BUZZER (R-CH)
CNP3
D301 MVR3338S
OPR/BATT
S304 FM MODE/ISS
MONO 1SS2 STEREO 1SS1
TO TUNER BOARD KH1
MO/ST
GND
R
L
+B
MUTE
CNP2
J302 CD/LINE IN
S301-1 FUNCTION
S301-2 FUNCTION
TAPE/RADIO OFF
TUNER
CD/LINE IN
Q306 SWITCH
Q306 DTA144ES
Q301 REG
Q301 2SD467
【MICROPHONE BOARD】
ECM301 MIC
HRP601 REC/PB HEAD
CNP1
S302-1 REC/PB
S302-2 REC/PB
PB REC
T301 BIAS OSC
Q302 2SC1815GR BIAS OSC
Q303 RN1202
【SWITCH BOARD】
S401 PLAY
S402 FF/REW
KH401
CNP4
M901 MOTOR
RV401 22k TAPE SPEED
S901 DIR MODE
DRY BATTERY SIZE "D" (IEC DESIGNATION) R20 6PCS. 9V
【TRANSFORMER BOARD】
T801 POWER TRANSFORMER
F801 1.25A
D801-D804: 1N4002AT
CNP801
CNP802
KH801
CNP5
【AC INLET BOARD】
CN801
CN802
CNJ801 ~AC IN

Note :

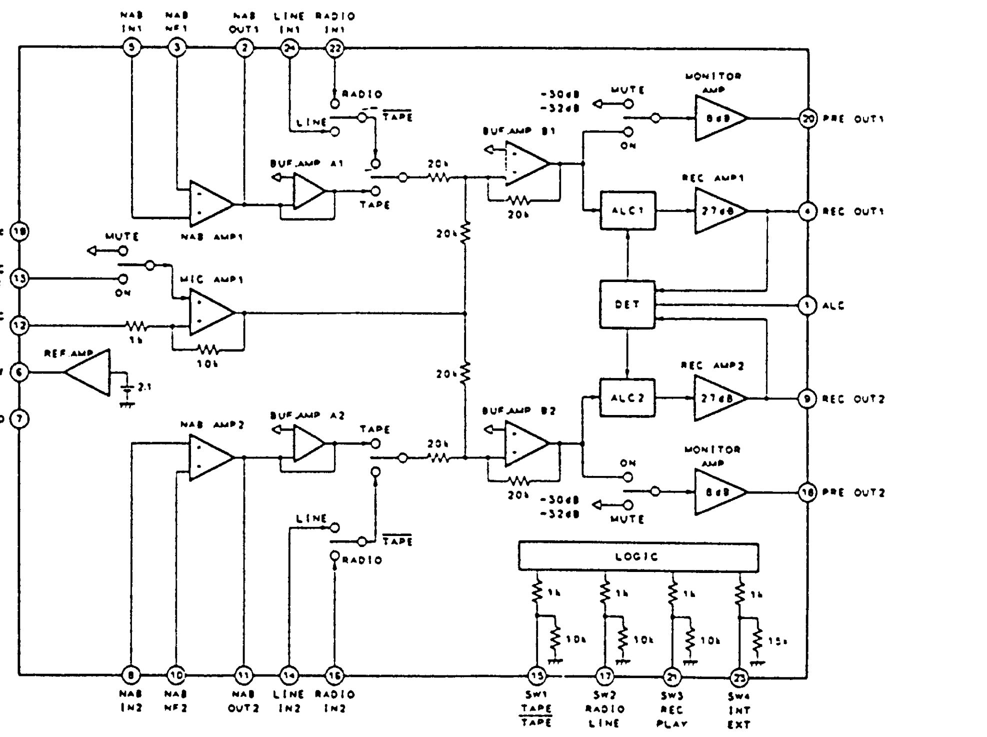
- All capacitors are in μF unless otherwise noted. pF : $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- B+ : B+ Line
- ▭ : adjustment for repair.
- Voltage is dc with respect to ground under no-signal (detuned) conditions.
- no mark: PB
  ( ): REC
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ⟩ : PB
  ⟩⟩ : REC

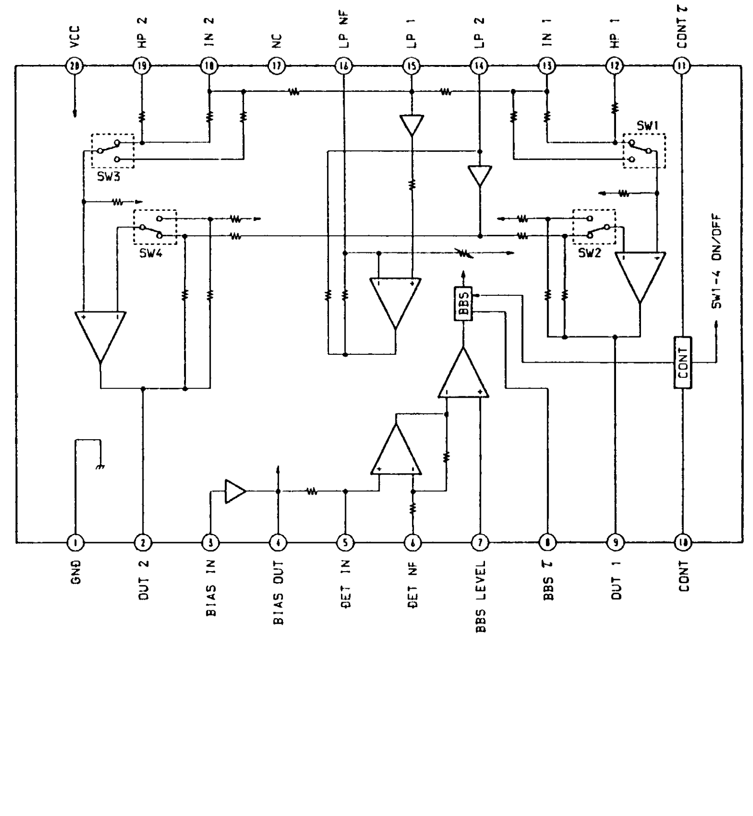
• IC Block Diagrams

IC301 TA2036



NAB IN1
NAB NF1
NAB OUT1
LINE IN1
RADIO IN1
PRE OUT1
REC OUT1
ALC
REC OUT2
PRE OUT2
Vcc
MIC IN
MIC NF
Vref
GND
NAB AMP1
NAB AMP2
MIC AMP1
REF AMP
BUF AMP A1
BUF AMP A2
BUF AMP B1
BUF AMP B2
MONITOR AMP
REC AMP1
REC AMP2
ALC1
ALC2
DET
LOGIC
MUTE
TAPE
LINE
RADIO
NAB IN2
NAB NF2
NAB OUT2
LINE IN2
RADIO IN2
SW1 TAPE/TAPE
SW2 RADIO LINE
SW3 REC PLAY
SW4 INT EXT

IC302 BA3870



SECTION 5
EXPLODED VIEWS

NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

-XX and -X mean standardized parts, so they may have some difference from the original one.

Color Indication of Appearance Parts

Example :

KNOB, BALANCE (WHITE)... (RED)

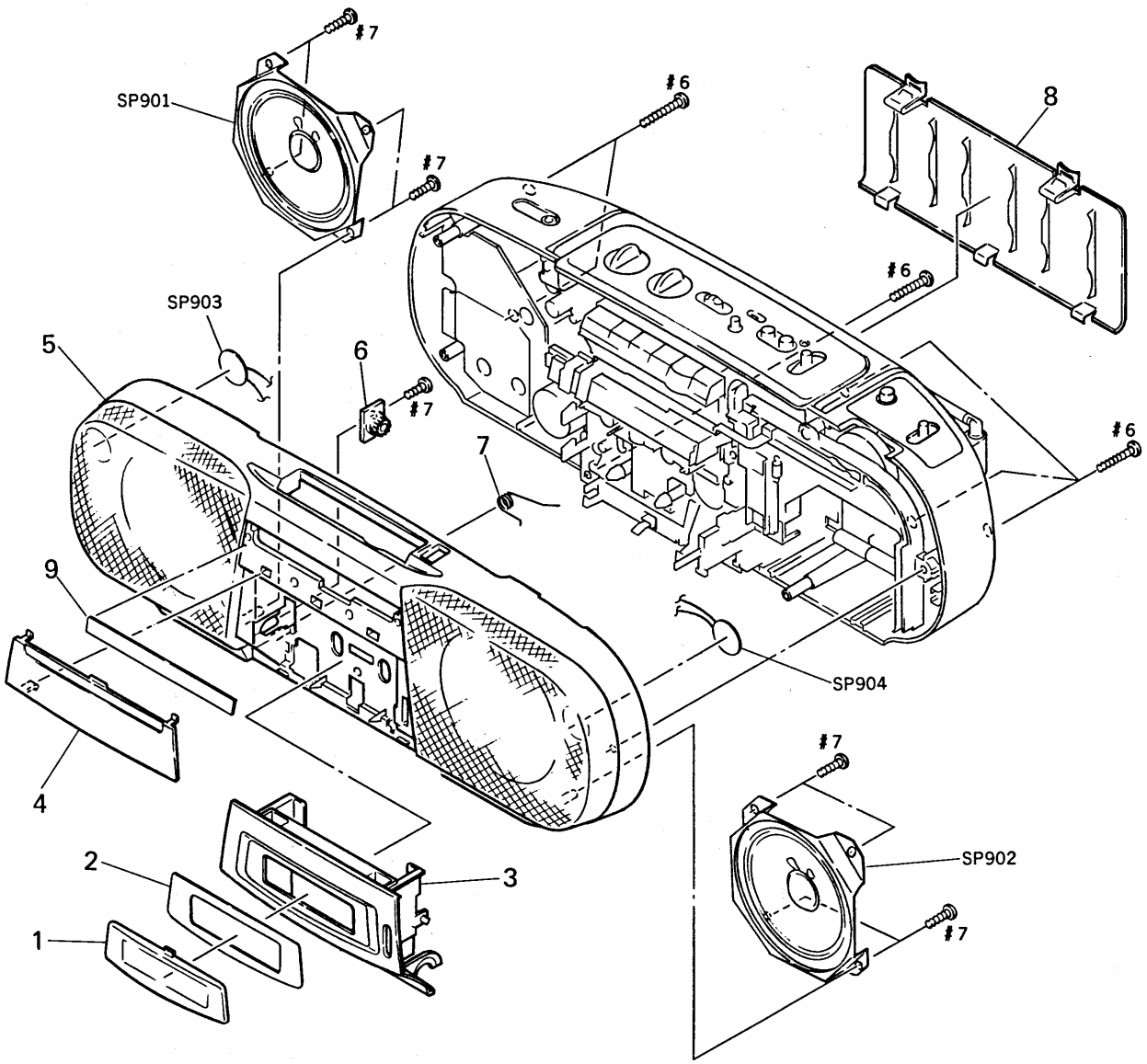
↑ ↑

Parts Color Cabinet's Color

Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

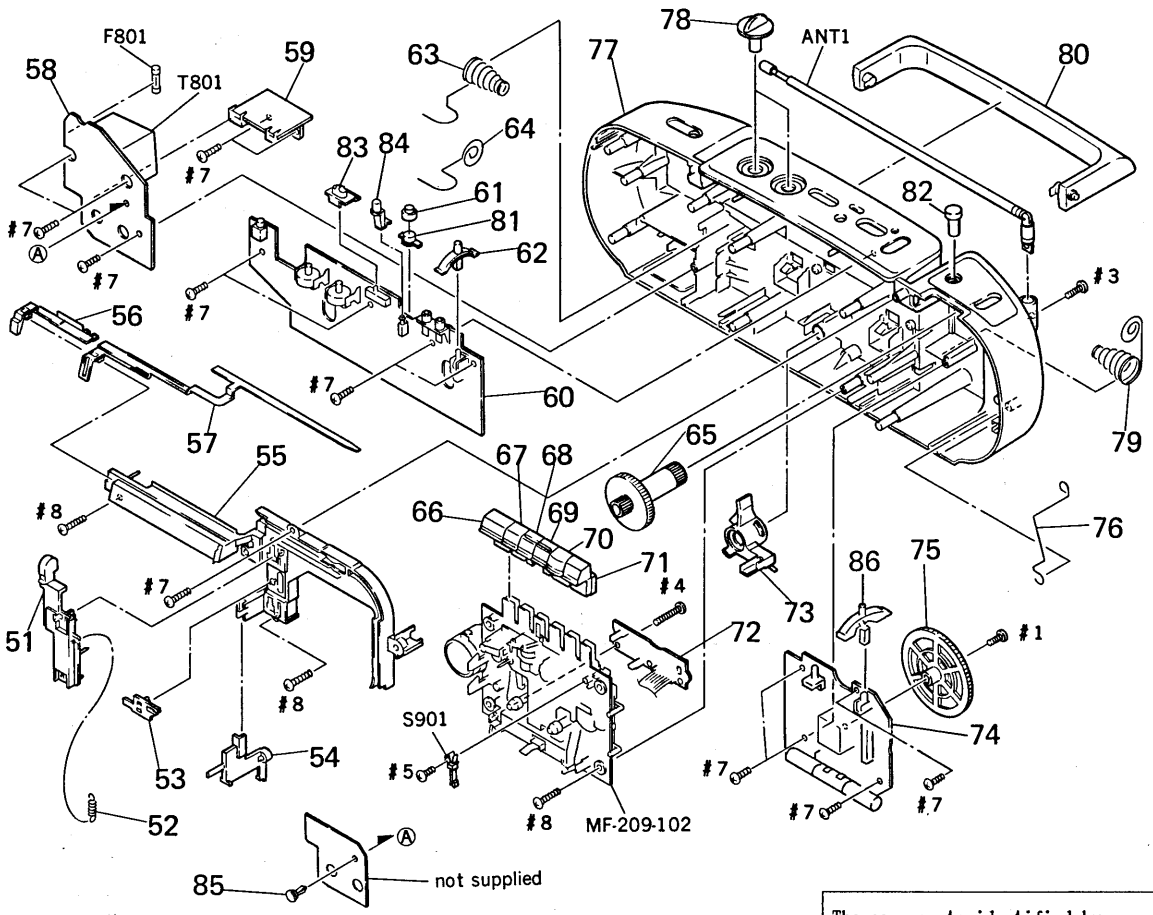
The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

5-1. FRONT CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	3-908-068-01	WINDOW, CASSETTE	
* 2	3-909-459-01	SHEET, ADHESIVE	
3	3-908-073-11	HOLDER, CASSETTE	
4	3-908-069-51	PLATE, DIAL	
5	X-3367-744-1	CABINET (F) SUB ASSY	
6	3-351-377-11	DAMPER	
7	3-909-454-01	SPRING, CASSETTE	
8	3-368-522-01	LID, BATTERY CASE	
* 9	3-909-458-01	SHEET (DIAL PLATE), ADHESIVE	
SP901	1-504-474-11	SPEAKER (10CM)	
SP902	1-504-474-11	SPEAKER (10CM)	
SP903	1-529-059-12	BUZZER	
SP904	1-529-059-12	BUZZER	

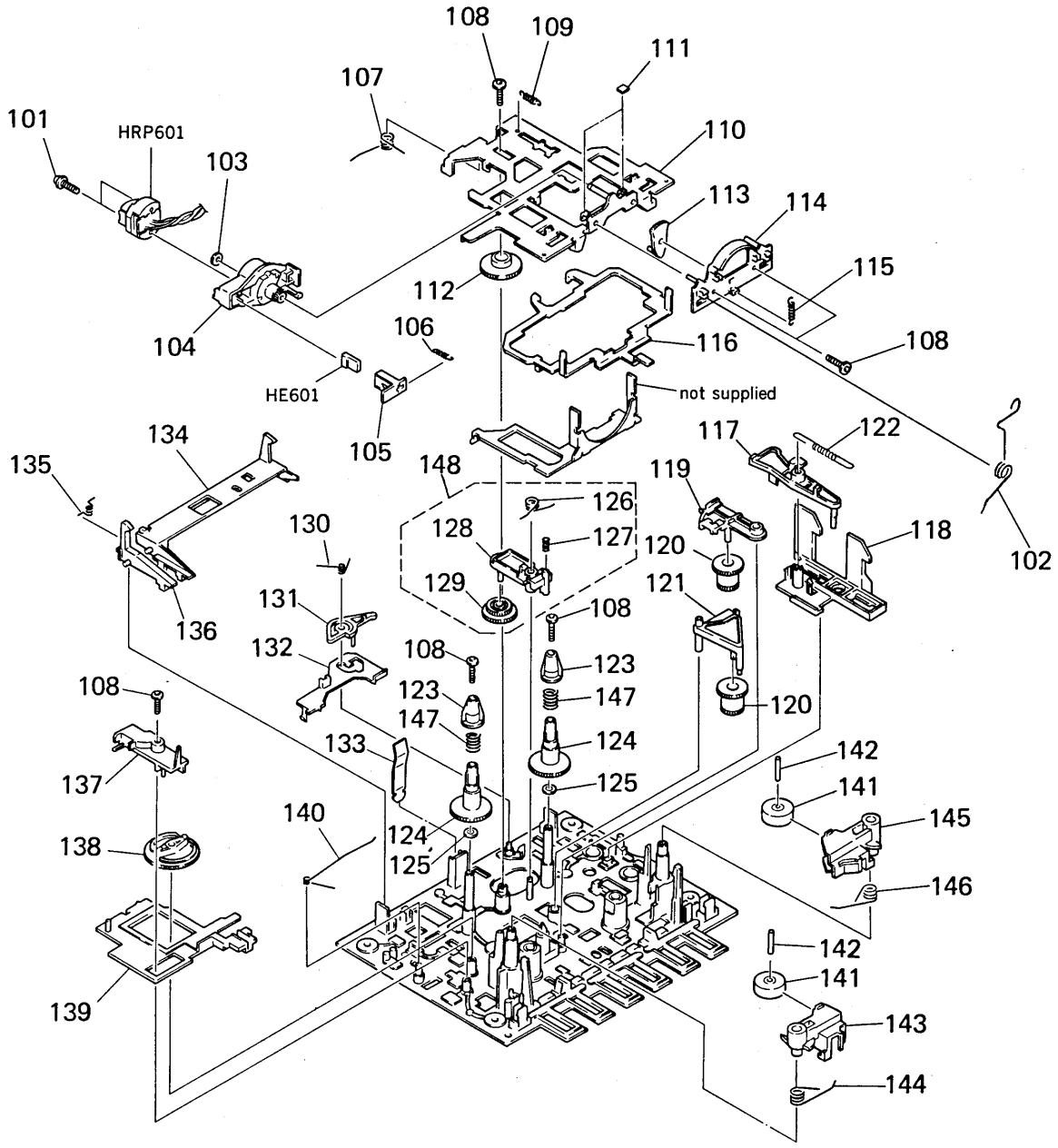
5-2. REAR CABINET SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

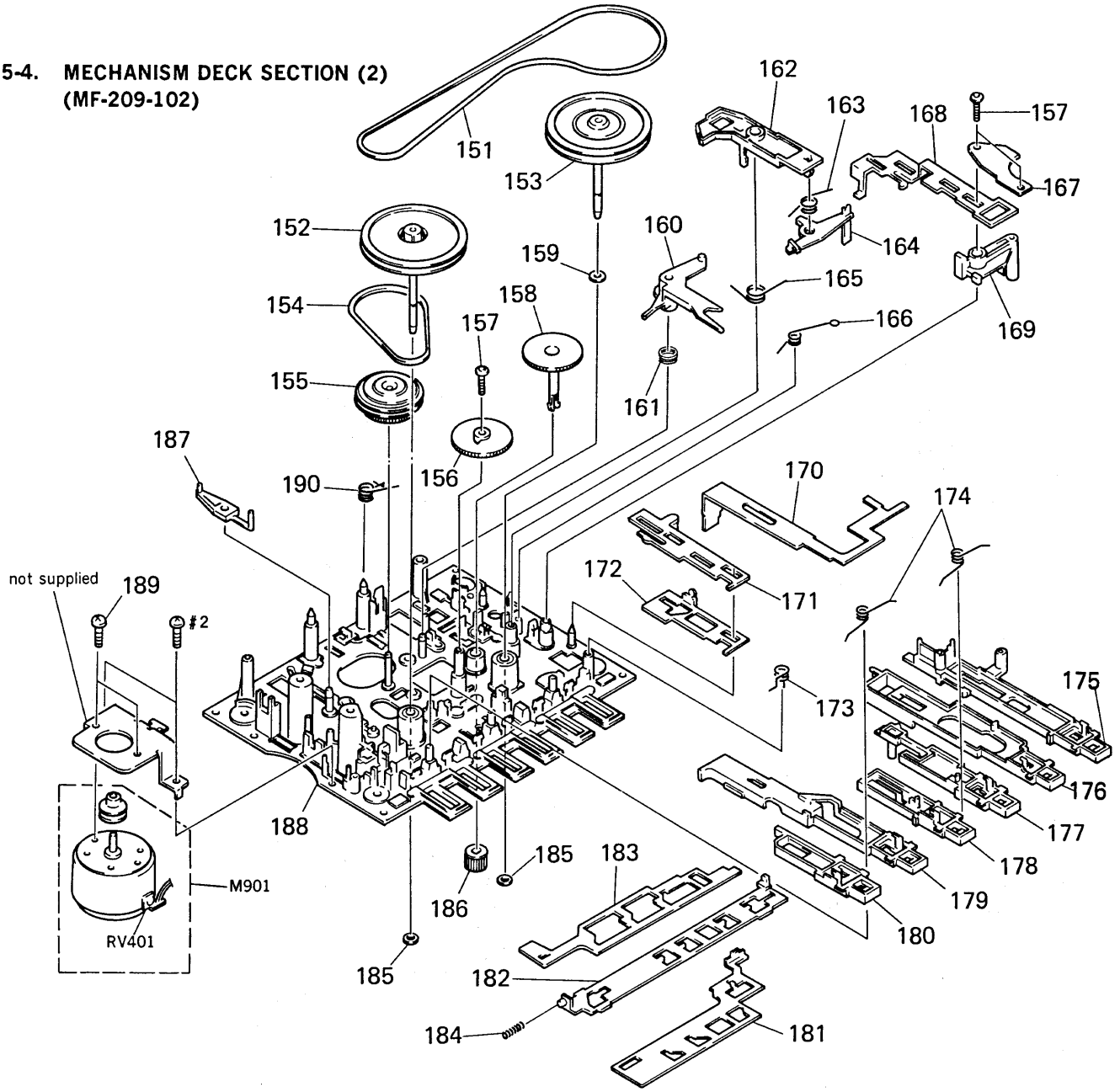
Ref. No.	Part No.	Description	Remark
51	3-909-480-01	BUTTON, DIRECTION	
52	3-379-754-01	SPRING (DIR.), TENSION	
53	3-909-456-01	LEVER, DIRECTION	
54	3-909-457-01	KNOB, DIRECTION	
55	3-909-481-01	CHASSIS, DIAL	
56	3-909-460-01	INDICATOR	
57	3-908-072-01	POINTER	
* 58	1-650-709-11	TRANSFORMER BOARD	
* 59	1-650-710-11	AC INLET BOARD	
* 60	A-3269-046-A	AUDIO BOARD, COMPLETE	
61	3-379-413-01	CUSHION (MICROPHONE)	
62	3-386-953-01	KNOB (LEVER)	
63	3-909-453-01	SPRING (-), BATTERY COIL	
64	3-909-452-01	TERMINAL (+), BATTERY	
65	3-908-066-01	KNOB, TUNING	
66	3-908-062-01	BUTTON (S/E), M.D.	
67	3-908-065-01	BUTTON (PAUSE), M.D.	
68	3-908-063-01	BUTTON (FF), M.D.	
69	3-908-064-01	BUTTON (REW), M.D.	
70	3-908-060-01	BUTTON (PLAY), M.D.	
71	3-908-061-01	BUTTON (REC), M.D.	
* 72	1-650-711-11	SWITCH BOARD	
73	3-909-461-01	LEVER, REC	
* 74	A-3269-047-A	TUNER BOARD, COMPLETE	
75	3-907-415-01	DRUM (PVC)	
* 76	3-909-455-01	TERMINAL, ANTENNA	
77	3-908-224-31	CABINET, REAR	
78	3-379-771-31	KNOB (ROTARY)	
79	3-379-412-01	TERMINAL (+ -), BATTERY	
80	X-3367-740-1	HANDLE ASSY	
* 81	1-650-708-11	MICROPHONE BOARD	
82	3-908-225-01	KNOB (F.T)	
83	3-907-412-01	KNOB (MEGA BASS)	
84	3-909-450-01	PUSH BUTTON	
85	4-812-134-00	RIVET, NYLON 3.5	
86	3-908-067-01	KNOB, LEVER	
ANT1	1-501-378-11	ANTENNA, TELESCOPIC	
⚠F801	1-532-285-00	FUSE, TIME-LAG (T1.25A)	
S901	1-570-559-11	SWITCH, LEAF (DIR MODE)	
⚠T801	1-450-492-11	TRANSFORMER, POWER	

5-3. MECHANISM DECK SECTION (1)
(MF-209-102)



Ref. No.	Part No.	Description	Remark
101	3-309-597-81	SCREW (1.4), TAPPING	
102	3-384-551-01	SPRING (R), HEAD WIRE	
103	3-336-319-01	RING, RETAINING	
104	3-374-371-01	HOLDER, HEAD	
105	3-374-344-01	GUIDE, ERASE HEAD	
106	3-374-345-01	SPRING, TENSION	
107	3-374-342-01	SPRING (HEAD), TORSION	
108	3-344-737-11	SCREW (B1.4X6), TAPPING	
109	3-380-814-01	SPRING, TENSION	
* 110	X-3363-914-1	CHASSIS ASSY, HEAD	
* 111	3-377-197-01	SHEET (AZ) (T=0.09)	
* 111	3-377-197-11	SHEET (AZ) (T=0.115)	
* 111	3-377-197-21	SHEET (AZ) (T=0.14)	
* 111	3-377-197-31	SHEET (AZ) (T=0.165)	
* 111	3-377-197-41	SHEET (AZ) (T=0.23)	
112	3-374-329-01	GEAR, MIDWAY	
113	3-374-343-01	LEVER (FAN TYPE)	
114	3-374-369-01	GEAR (BASE), HEAD	
115	3-386-829-01	SPRING, TENSION	
* 116	3-374-370-01	SLIDER (HD)	
117	3-374-336-01	LEVER (SW)	
* 118	3-374-367-01	LEVER (EJECT)	
119	3-374-338-01	LEVER (REW)	
120	3-374-339-01	GEAR, FR	
121	3-374-368-01	LEVER (FF)	
122	3-377-194-01	SPRING, TENSION	
123	4-930-408-11	CLAW, REEL	
124	3-374-326-01	TABLE, REEL	
125	3-377-195-01	WASHER (S)	
126	3-374-327-01	SPRING (N R), TORSION	
127	3-343-264-81	COLLAR, SPRING	
128	3-374-363-01	LEVER (FWD)	
129	3-374-328-01	GEAR, FWD	
130	3-374-334-01	SPRING (BRAKE), TORSION	
131	3-374-333-01	LEVER (PAUSE)	
132	3-374-332-01	SLIDER (BRAKE)	
133	3-376-135-01	SPRING, CASSETTE	
134	3-374-366-01	LEVER (ERASE R)	
135	4-930-451-01	SPRING	
136	3-374-335-01	LEVER (ERASE N)	
137	3-374-330-01	LEVER (DIR A)	
138	3-374-365-01	GEAR (NR), CAM	
139	3-374-364-01	SLIDER (NR)	
140	3-374-331-01	SPRING (DIR), TORSION	
141	3-366-051-11	PINCH ROLLER	
142	3-366-052-11	SHAFT, PINCH ROLLER	
* 143	3-374-373-01	LEVER (PINCH R)	
144	3-374-347-01	SPRING (R), TORSION	
* 145	3-374-372-01	LEVER (PINCH N)	
146	3-374-346-01	SPRING (N), TORSION	
147	4-931-747-11	SPRING, COMPRESSION	
148	X-3364-952-1	LEVER (FWD) ASSY	
HE601	1-543-719-11	HEAD, MAGNETIC (ERASE)	
HRP601	1-543-872-11	HEAD, MAGNETIC (REC/PB)	

5-4. MECHANISM DECK SECTION (2) (MF-209-102)



Ref. No.	Part No.	Description	Remark
151	3-374-322-01	BELT	
152	X-3365-411-1	FLY ASSY (N2)	
153	X-3363-913-1	FLY ASSY (R)	
154	3-374-321-01	BELT	
155	X-3363-917-1	LIMITER ASSY, FWD	
156	3-374-359-11	GEAR (S OFF), CAM	
157	3-344-737-11	SCREW (B1.4X6), TAPPING	
158	3-374-318-11	GEAR (A), DECELERATION	
159	3-683-454-01	WASHER, POLYETHYLENE	
* 160	3-374-316-01	LEVER (S OFF A)	
161	3-375-011-01	SPRING, COMPRESSION	
162	3-374-357-01	LEVER (S OFF C)	
163	3-374-311-01	SPRING (S OFF C), TORSION	
164	3-374-312-01	LEVER (S OFF B)	
165	3-374-313-01	SPRING (S OFF), TORSION	
166	3-374-307-01	SPRING (MUTUAL), TORSION	
* 167	3-374-317-01	REINFORCEMENT	
168	3-374-358-01	SLIDER (ERASING)	
169	3-374-314-01	LEVER (DIR B)	
* 170	3-374-315-01	SLIDER (CR)	
171	3-374-306-01	SLIDER (MODE B)	
* 172	3-374-305-01	SLIDER (MODE A)	
173	3-374-309-01	SPRING (REC), TORSION	
174	3-374-308-01	SPRING (CONTROL), TORSION	
175	3-374-356-01	SLIDER (REC)	
176	3-374-355-01	SLIDER (FWD)	
177	3-374-354-01	SLIDER (REW)	
178	3-374-353-01	SLIDER (FF)	
179	3-374-352-01	SLIDER (PAUSE)	
180	3-374-351-01	SLIDER (STOP)	
* 181	3-374-348-01	SLIDER (FR)	
182	3-374-350-01	SLIDER (LOCK)	
* 183	3-374-349-01	SLIDER (SW)	
184	4-932-648-01	SPRING, COMPRESSION	
185	3-374-324-01	RING, RETAINING	
186	3-374-325-01	GEAR (B), DECELERATION	
187	3-374-304-01	LEVER (PAUSE ROCK)	
* 188	X-3363-918-1	CHASSIS ASSY, MECHANICAL	
189	3-343-251-01	SCREW (M2.6X2.5)	
190	3-374-310-01	SPRING (FWD), TORSION	
M901	A-3253-181-A	MOTOR ASSY	
RV401	1-230-495-11	RES, ADJ, CARBON 2K	

SECTION 6
ELECTRICAL PARTS LIST

AC INLET **AUDIO**

NOTE:

Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviation
  G : German model

Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	1-650-710-11	AC INLET BOARD			
		**********			
		< CONNECTOR >			
* CN801	1-764-648-11	HOUSING, CONNECTOR 3P			
* CN802	1-764-647-11	HOUSING, CONNECTOR 3P			
		< AC INLET >			
⚠CNJ801	1-526-838-11	INLET, AC 2P (~AC IN)			
**********					
*	A-3269-046-A	AUDIO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-124-126-00	ELECT	47uF	20%	10V
C102	1-161-020-11	CERAMIC	0.039uF	10%	16V
C103	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V
C104	1-163-209-00	CERAMIC MELF	0.0015uF	20%	16V
C105	1-124-902-00	ELECT	0.47uF	20%	50V
C106	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C107	1-124-902-00	ELECT	0.47uF	20%	50V
C108	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C109	1-124-925-11	ELECT	2.2uF	20%	100V
C110	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C111	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C121	1-124-903-11	ELECT	1uF	20%	50V
C122	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V
C123	1-124-925-11	ELECT	2.2uF	20%	100V
C124	1-161-057-00	CERAMIC	0.033uF	10%	50V
C131	1-124-126-00	ELECT	47uF	20%	10V
C132	1-163-209-00	CERAMIC MELF	0.0015uF	20%	16V
C133	1-124-443-00	ELECT	100uF	20%	10V
C134	1-130-495-00	MYLAR	0.1uF	5%	50V
C135	1-124-471-00	ELECT	1000uF	20%	6.3V
C201	1-124-126-00	ELECT	47uF	20%	10V
C202	1-161-020-11	CERAMIC	0.039uF	10%	16V
C203	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V
C204	1-163-209-00	CERAMIC MELF	0.0015uF	20%	16V
C205	1-124-902-00	ELECT	0.47uF	20%	50V
C206	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C207	1-124-902-00	ELECT	0.47uF	20%	50V
C208	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C209	1-124-925-11	ELECT	2.2uF	20%	100V
C210	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C211	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C221	1-124-903-11	ELECT	1uF	20%	50V
C222	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V
C223	1-124-925-11	ELECT	2.2uF	20%	100V
C224	1-161-057-00	CERAMIC	0.033uF	10%	50V
C231	1-124-126-00	ELECT	47uF	20%	10V
C232	1-163-209-00	CERAMIC MELF	0.0015uF	20%	16V
C233	1-124-443-00	ELECT	100uF	20%	10V
C234	1-130-495-00	MYLAR	0.1uF	5%	50V
C235	1-124-471-00	ELECT	1000uF	20%	6.3V
C301	1-124-443-00	ELECT	100uF	20%	10V
C302	1-126-176-11	ELECT	220uF	20%	10V
C303	1-124-126-00	ELECT	47uF	20%	10V
C304	1-124-907-11	ELECT	10uF	20%	50V
C305	1-124-927-11	ELECT	4.7uF	20%	100V
C306	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C307	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C308	1-124-902-00	ELECT	0.47uF	20%	50V
C321	1-124-443-00	ELECT	100uF	20%	10V
C322	1-124-902-00	ELECT	0.47uF	20%	50V
C323	1-161-057-00	CERAMIC	0.033uF	10%	50V
C324	1-162-847-11	CERAMIC	0.047uF	10%	16V
C325	1-161-057-00	CERAMIC	0.033uF	10%	50V
C326	1-124-464-11	ELECT	0.22uF	20%	50V
C327	1-124-792-51	ELECT	33uF	20%	50V
C328	1-124-907-11	ELECT	10uF	20%	50V
C329	1-126-233-11	ELECT	22uF	20%	50V
C330	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C331	1-124-120-11	ELECT	220uF	20%	25V
C332	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C341	1-124-126-00	ELECT	47uF	20%	10V
C342	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V
C344	1-130-481-00	MYLAR	0.0068uF	5%	50V
C345	1-162-397-11	CERAMIC MELF	0.001uF	10%	50V
C346	1-163-063-00	CERAMIC MELF	0.022uF		25V

AUDIO

Ref. No.	Part No.	Description			Remark
C351	1-126-233-11	ELECT	22uF	20%	50V
C352	1-124-903-11	ELECT	1uF	20%	50V
C353	1-162-847-11	CERAMIC	0.047uF	10%	16V
C354	1-161-057-00	CERAMIC	0.033uF	10%	50V
C355	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C361	1-124-887-00	ELECT	3300uF	20%	16V
C362	1-126-176-11	ELECT	220uF	20%	10V
C363	1-163-063-00	CERAMIC MELF	0.022uF		25V
C364	1-163-063-00	CERAMIC MELF	0.022uF		25V
		< CONNECTOR >			
CNP1	1-506-987-11	PIN, CONNECTOR (PC BOARD) 5P			
* CNP2	1-568-272-11	SOCKET, CONNECTOR 6P			
CNP3	1-506-986-11	PIN, CONNECTOR (PC BOARD) 4P			
CNP4	1-506-986-11	PIN, CONNECTOR (PC BOARD) 4P			
* CNP5	1-691-573-11	PIN, CONNECTOR (PC BOARD) 2P			
		< DIODE >			
D301	8-719-980-67	LED	MVR3338S (OPR/BATT)		
D302	8-719-109-97	DIODE	RD6.8ES-B2		
D305	8-719-911-19	DIODE	1SS119		
D306	8-719-911-19	DIODE	1SS119		
D307	8-719-911-19	DIODE	1SS119		
		< IC >			
IC301	8-759-164-45	IC	TA2036N		
IC302	8-759-048-60	IC	BA3870		
IC303	8-759-060-21	IC	LA4598		
		< JACK >			
J301	1-566-891-11	JACK (PHONES)			
J302	1-563-716-11	JACK, PIN (CD/LINE IN)			
		< JUMPER RESISTOR >			
JR101-103					
	1-259-041-11	CARBON MELF	0	5%	1/8W
		< COIL >			
L300	1-414-183-41	INDUCTOR	10uH		
		< TRANSISTOR >			
Q301	8-729-142-46	TRANSISTOR	2SC2001-LK		
Q302	8-729-281-53	TRANSISTOR	2SC1815-GR		
Q303	8-729-206-20	TRANSISTOR	RN1202		
Q306	8-729-900-65	TRANSISTOR	DTA144ES		
Q307	8-729-904-36	TRANSISTOR	DTC114YS		
Q308	8-729-904-36	TRANSISTOR	DTC114YS		

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R101	1-249-404-00	CARBON	82	5%	1/4W
R102	1-249-440-11	CARBON	82K	5%	1/4W
R103	1-249-423-11	CARBON	3.3K	5%	1/4W
R104	1-249-431-11	CARBON	15K	5%	1/4W
R105	1-249-437-11	CARBON	47K	5%	1/4W
R106	1-249-424-11	CARBON	3.9K	5%	1/4W
R107	1-249-417-11	CARBON	1K	5%	1/4W
R108	1-249-437-11	CARBON	47K	5%	1/4W
R109	1-249-423-11	CARBON	3.3K	5%	1/4W
R110	1-249-430-11	CARBON	12K	5%	1/4W
R121	1-249-423-11	CARBON	3.3K	5%	1/4W
R131	1-249-406-11	CARBON	120	5%	1/4W
R132	1-247-807-11	CARBON	100	5%	1/8W
R133	1-215-493-00	METAL	1M	1%	1/6W
R134	1-249-408-11	CARBON	180	5%	1/4W
R201	1-249-404-00	CARBON	82	5%	1/4W
R202	1-249-440-11	CARBON	82K	5%	1/4W
R203	1-249-423-11	CARBON	3.3K	5%	1/4W
R204	1-249-431-11	CARBON	15K	5%	1/4W
R205	1-249-437-11	CARBON	47K	5%	1/4W
R206	1-249-424-11	CARBON	3.9K	5%	1/4W
R207	1-249-417-11	CARBON	1K	5%	1/4W
R208	1-249-437-11	CARBON	47K	5%	1/4W
R209	1-249-423-11	CARBON	3.3K	5%	1/4W
R210	1-249-430-11	CARBON	12K	5%	1/4W
R221	1-249-423-11	CARBON	3.3K	5%	1/4W
R231	1-249-406-11	CARBON	120	5%	1/4W
R232	1-247-807-11	CARBON	100	5%	1/8W
R233	1-215-493-00	METAL	1M	1%	1/6W
R234	1-249-408-11	CARBON	180	5%	1/4W
R301	1-215-493-00	METAL	1M	1%	1/6W
R302-304					
	1-249-429-11	CARBON	10K	5%	1/4W
R305	1-247-807-11	CARBON	100	5%	1/8W
R321	1-249-402-11	CARBON	56	5%	1/4W
R322	1-249-427-11	CARBON	6.8K	5%	1/4W
R323	1-249-418-11	CARBON	1.2K	5%	1/4W
R324	1-249-424-11	CARBON	3.9K	5%	1/4W
R325	1-259-090-11	CARBON MELF	100K	5%	1/8W
R326	1-215-493-00	METAL	1M	1%	1/6W
R341	1-249-406-11	CARBON	120	5%	1/4W
R342	1-249-435-11	CARBON	33K	5%	1/4W
R343	1-249-389-11	CARBON	4.7	5%	1/4W
R344	1-249-417-11	CARBON	1K	5%	1/4W
R351	1-247-807-11	CARBON	100	5%	1/8W
R352	1-249-421-11	CARBON	2.2K	5%	1/4W
R353	1-249-426-11	CARBON	5.6K	5%	1/4W

Ref. No.	Part No.	Description			Remark
⚠R361	1-219-113-11	FUSIBLE	6.8	5% 1/4W	F
R362	1-249-411-11	CARBON	330	5% 1/4W	
R363	1-247-807-11	CARBON	100	5% 1/8W	
R364	1-249-416-11	CARBON	820	5% 1/4W	
R365	1-249-411-11	CARBON	330	5% 1/4W	
		< VARIABLE RESISTOR >			
RV301	1-241-745-11	RES, VAR, CARBON 20K/20K (TONE)			
RV302	1-241-746-11	RES, VAR, CARBON 20K/20K (VOLUME)			
		< SWITCH >			
S301	1-572-299-11	SWITCH, LEVER SLIDE (FUNCTION)			
S302	1-570-068-11	SWITCH, PUSH (1 KEY) (PB/REC)			
S303	1-571-307-11	SWITCH, SLIDE (MEGA BASS)			
S304	1-572-006-11	SWITCH, PUSH (1 KEY) (FM MODE/ISS)			
		< TRANSFORMER >			
T301	1-433-268-00	TRANSFORMER, BIAS OSCILLATOR			
**********					
*	1-650-708-11	MICROPHONE BOARD			
		**********			
		< MICROPHONE >			
ECM301	1-542-178-11	MICROPHONE, ELECTRET CONDENSER (MIC)			
**********					
*	1-650-711-11	SWITCH BOARD			
		**********			
		< CAPACITOR >			
C401	1-101-004-00	CERAMIC	0.01uF		50V
		< CABLE HOLDER >			
* KH401	1-573-288-11	HOLDER, CABLE 8P			
		< SWITCH >			
S401	1-696-515-11	SWITCH, LEAF (PLAY)			
S402	1-696-515-11	SWITCH, LEAF (FF/REW)			
**********					

Ref. No.	Part No.	Description			Remark
*	1-650-709-11	TRANSFORMER BOARD			
		**********			
	1-533-217-31	HOLDER, FUSE			
		< CAPACITOR >			
C801-804					
	1-101-005-00	CERAMIC	22000PF		50V
		< CONNECTOR >			
* CNP801	1-560-666-00	PIN, CONNECTOR 3P			
* CNP802	1-764-646-11	PIN, CONNECTOR (PC BOARD) 2P			
		< DIODE >			
D801	8-719-200-02	DIODE 10E2			
D802	8-719-200-02	DIODE 10E2			
D803	8-719-200-02	DIODE 10E2			
D804	8-719-200-02	DIODE 10E2			
		< FUSE >			
⚠F801	1-532-285-00	FUSE, TIME-LAG (T1.25A)			
		< CABLE HOLDER >			
* KH801	1-573-287-11	HOLDER, CABLE 2P			
		< TRANSFORMER >			
⚠T801	1-450-492-11	TRANSFORMER, POWER			
**********					
*	A-3269-047-A	TUNER BOARD, COMPLETE			
		**********			
	3-907-415-01	DRUM (PVC)			
	7-621-770-87	SCREW +P 2.6X5			
		< CAPACITOR >			
C1	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C2	1-163-189-00	CERAMIC MELF	220PF	10%	50V
C3	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C4	1-124-907-11	ELECT	10uF	20%	50V
C5	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C7	1-163-167-00	CERAMIC MELF	27PF	5%	50V
C8	1-102-961-00	CERAMIC	27PF	5%	50V
C10	1-163-150-00	CERAMIC MELF	3.3PF	10%	50V
C11	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C14	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C15	1-124-927-11	ELECT	4.7uF	20%	100V
C16	1-124-903-11	ELECT	1uF	20%	50V
C17	1-124-126-00	ELECT	47uF	20%	10V

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

TUNER

Ref. No.	Part No.	Description			Remark
C18	1-124-126-00	ELECT	47uF	20%	10V
C19	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C20	1-124-903-11	ELECT	1uF	20%	50V
C21	1-124-925-11	ELECT	2.2uF	20%	100V
C22	1-124-443-00	ELECT	100uF	20%	10V
C23	1-124-902-00	ELECT	0.47uF	20%	50V
C24	1-124-927-11	ELECT	4.7uF	20%	100V
C25	1-124-463-00	ELECT	0.1uF	20%	50V
C26	1-163-063-00	CERAMIC MELF	0.022uF		25V
C27	1-162-840-11	CERAMIC	0.012uF	10%	16V
C28	1-162-840-11	CERAMIC	0.012uF	10%	16V
C32	1-163-152-00	CERAMIC MELF	4.7PF	10%	50V
C33	1-163-155-00	CERAMIC MELF	8.2PF	10%	50V
C34	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C35	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C36	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C38	1-102-947-00	CERAMIC	10PF	5%	50V
C39	1-136-980-91	FILM	180PF	5%	63V
C40	1-136-232-11	FILM	0.0043uF	5%	63V
C41	1-136-355-11	FILM	330PF	5%	63V
C42	1-130-011-00	FILM	270PF	5%	63V
C43	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C45-47	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C48	1-163-209-00	CERAMIC MELF	0.0015uF	20%	16V
C49	1-163-063-00	CERAMIC MELF	0.022uF		25V
C50	1-163-181-00	CERAMIC MELF	100PF	10%	50V
C51	1-162-397-11	CERAMIC MELF	0.001uF	10%	50V
C52	1-163-161-00	CERAMIC MELF	15PF	5%	50V
C53	1-163-191-00	CERAMIC MELF	270PF	10%	50V
C71	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C72	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
		< FILTER >			
CF1	1-577-327-81	FILTER, CERAMIC			
CF2	1-567-670-11	FILTER, CERAMIC			
CF3	1-577-327-81	FILTER, CERAMIC			
CF4	1-577-327-81	FILTER, CERAMIC			
		< VARIABLE CAPACITOR >			
CT1-4 CV1-4	1-151-693-11	CAP, VAR (TUNING)			
		< TRIMMER >			
CT5	1-141-361-41	CAP, VAR FILM TRIMMER			
CT6	1-141-486-11	CAP, ADJ			
CT7	1-141-439-21	CAP, ADJ			
CT8	1-141-439-21	CAP, ADJ			

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D1	8-719-911-19	DIODE 1SS119			
D2	8-719-911-19	DIODE 1SS119			
D3	8-719-911-19	DIODE 1SS119			
		< FILTER >			
FL1	1-236-711-21	FILTER, BAND PASS			
		< IC >			
IC1	8-752-050-20	IC CXA1238S			
		< JUMPER RESISTOR >			
JR1	1-259-041-11	CARBON MELF	0	5%	1/8W
JR2	1-259-041-11	CARBON MELF	0	5%	1/8W
JR4	1-259-041-11	CARBON MELF	0	5%	1/8W
JR5	1-259-041-11	CARBON MELF	0	5%	1/8W
JR7	1-259-041-11	CARBON MELF	0	5%	1/8W
JR9	1-259-041-11	CARBON MELF	0	5%	1/8W
JR11	1-259-041-11	CARBON MELF	0	5%	1/8W
JR13-22	1-259-041-11	CARBON MELF	0	5%	1/8W
		< COIL >			
L1	1-406-999-11	COIL, AIR-CORE			
L2	1-406-956-11	COIL (WITH CORE)			
L3	1-402-590-11	ANTENNA, FERRITE-ROD (LW/MW)			
L4	1-406-252-11	COIL (OSC)			
L5	1-402-596-31	COIL (ANT)			
L6	1-406-280-11	COIL (OSC)			
L8	1-406-253-11	COIL (OSC)			
L9	1-414-174-11	INDUCTOR	0.33uH		
L11	1-414-174-11	MICRO INDUCTOR	0.33uH		
		< TRANSISTOR >			
Q1	8-729-206-25	TRANSISTOR RN1207			
Q2	8-729-281-53	TRANSISTOR 2SC1815-GR			
Q3	8-729-900-61	TRANSISTOR DTA114ES			
		< RESISTOR >			
R3	1-249-421-11	CARBON	2.2K	5%	1/4W
R6	1-259-090-11	CARBON MELF	100K	5%	1/8W
R9	1-259-090-11	CARBON MELF	100K	5%	1/8W
R10	1-249-404-00	CARBON	82	5%	1/4W
R11	1-249-427-11	CARBON	6.8K	5%	1/4W
R12	1-249-427-11	CARBON	6.8K	5%	1/4W
R13	1-247-807-31	CARBON MELF	100	5%	1/8W
R14	1-249-429-11	CARBON	10K	5%	1/4W
R15	1-215-477-00	METAL	220K	1%	1/6W

Ref. No.	Part No.	Description			Remark
R16	1-215-477-00	METAL	220K	1%	1/6W
R17	1-249-421-11	CARBON	2.2K	5%	1/4W
R22	1-249-411-11	CARBON	330	5%	1/4W
R23	1-249-429-11	CARBON	10K	5%	1/4W
R30	1-249-417-11	CARBON	1K	5%	1/4W
R31	1-249-431-11	CARBON	15K	5%	1/4W
R32	1-259-090-11	CARBON MELF	100K	5%	1/8W
		< VARIABLE RESISTOR >			
RV1	1-238-601-11	RES, ADJ, CARBON 22K			
RV2	1-223-384-11	RES, VAR, CARBON 100K (FINE TUNE)			
		< SWITCH >			
S1	1-571-147-11	SWITCH, LEVER SLIDE (BAND)			
		< TRANSFORMER >			
T1	1-406-952-11	TRANSFORMER, IF			
		MISCELLANEOUS			
ANT1	1-501-378-11	ANTENNA, TELESCOPIC			
⚠F801	1-532-285-00	FUSE, TIME-LAG (T1.25A)			
HE601	1-543-719-11	HEAD, MAGNETIC (ERASE)			
HRP601	1-543-872-11	HEAD, MAGNETIC (REC/PB)			
M901	A-3253-181-A	MOTOR ASSY			
RV401	1-230-495-11	RES, ADJ, CARBON 2K			
S901	1-570-559-11	SWITCH, LEAF (DIR MODE)			
SP901	1-504-474-11	SPEAKER (10CM)			
SP902	1-504-474-11	SPEAKER (10CM)			
SP903	1-529-059-12	BUZZER			
SP904	1-529-059-12	BUZZER			

HARDWARE LIST

#1	7-621-770-87	SCREW +P 2.6X5
#2	7-621-775-20	SCREW +PTT 2.6X5 (S)
#3	7-682-548-09	SCREW +B 3X8
#4	7-682-553-04	SCREW +BVTT 3X20 (S)
#5	7-685-133-19	SCREW +P 2.6X6 TYPE2
#6	7-685-153-19	SCREW +P 3X30 TYPE2 NON-SLIT
#7	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#8	7-685-649-79	SCREW +BVTP 3X14 TYPE2 N-S

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
⚠	1-575-131-11	CORD, POWER (AEP, G)	
⚠	1-751-214-11	CORD, POWER (UK)	
	3-758-128-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH)	
	3-758-128-41	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN, PORTUGUESE) (AEP)	
*	3-909-587-01	INDIVIDUAL CARTON	
*	3-912-042-01	CUSHION (LEFT)	
*	3-912-043-01	CUSHION (RIGHT)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

9-959-408-12
(including 9-959-408-91)

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